

66. The apparatus according to Claim 65 wherein the interface means further comprises linkage means for linking action of the virtual object to a second virtual object.

D^W 67. The apparatus according to Claim 66 wherein the position sensing means and the flex sensing means operate without using a camera.

68. The apparatus according to Claim 66 wherein the virtual object is a tool which acts upon the second virtual object. ✓

REMARKS

Claims 1-25, 28-61 are pending. Claims 26 and 27 have been cancelled. Claims 62-68 have been added.

Claims 13-19 and 33-41 have been rejected under 35 U.S.C. § 103 as being unpatentable over Haney. This basis for rejection is respectfully traversed.

Independent Claims 13 and 33 have been amended to clarify that the applicants are claiming an apparatus for controlling a computer display of the type having a virtual object depicted thereon that is used for communicating and interacting with a computer program. Furthermore, these claims have been amended to clarify that the cursor emulates the flexure of a part of the user's body for interactively acting upon the virtual object to allow communication and interaction between the user and the

computer program. Haney does not disclose a cursor of the type claimed by the applicants and there is no disclosure or suggestions in Haney how to make a system wherein the animated figure in Haney is capable of acting upon a virtual object to allow communication and interaction between the user and the computer program.

Claims 1-3, 8, 10, 11, 13-23, 33-45, 48, 49, and 56-61 have been rejected under 35 U.S.C. § 103 as being unpatentable over Haney in further in view of Zimmerman. This basis for rejection is respectfully traversed.

Claim 1 has been amended to clarify that the cursor in the applicant's system emulates the flexure of fingers and the position of the hand for interactively acting upon a virtual object to allow communication and interaction between the user and a computer program.

Claims 13 and 33 have been amended to clarify that the cursor emulates the flexure and/or position of a part of the user's body for interactively acting upon a virtual object to allow communication and interaction between the user and a computer program. Since Haney neither discloses nor suggests a computer which operates in the claimed manner, the rejection cannot stand.

Furthermore, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. Under 35 U.S.C. § 103, teachings of reference can be combined

only if there is some suggestion or incentive to do so. Notice that the applicants are not saying that the prior art must expressly suggest the combination or that the various devices of the prior art must be capable of direct physical incorporation into one another. Rather, the applicants are saying that the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggests the desirability of the modification.

The purpose and operation of the Haney device is to place illuminated markers on a live actor and visually capture an image of the actor. A pattern recognition algorithm then produces an animated figure based on the position of the illuminated markers in the image. Zimmerman discloses a flex sensor which produces a non-visual analog signal which varies as the sensor is bent. Since the Haney device relies exclusively upon visual location of illuminated markers, substitution of the illuminated markers with the Zimmerman sensors would render the Haney device inoperable because there would be no illuminated markers for the camera to detect. When a proposed modification renders the prior art device inoperable, the prior art teaches away from such a modification. Furthermore, neither Haney nor Zimmerman discusses how analog signals, such as that provided by the Zimmerman device, are to be processed in order to produce an animated figure.

Claims 4-7 and 9 have been rejected under 35 U.S.C. § 103 as being unpatentable over Haney in view of Zimmerman and further in

view of Herrington and Davison. The examiner states that Herrington and Davison are cited to teach the conventional use of ultrasonics to provide relative positional information which could have been used in the device of Haney as modified. As noted above, there is no motivation to modify Haney in the manner suggested. Furthermore, even if the use of ultrasonics to provide relative positional information is known, there must be a reason why someone would want to use the teachings of Herrington and Davison in the Haney device. The Haney patent makes no mention or suggestion that the use of ultrasonics would be important to the operation of the computer animation device disclosed therein. Again, Haney relies upon visual indications of position whereas ultrasonics are non-visual. In addition, while Herrington and Davison show the use of ultrasonics to provide relative positional information, there is no indication that such a teaching would be necessary or desirable in the computer animation system of Haney. Haney relies exclusively on visual detection of the object's position.

Claim 12 has been rejected under 35 U.S.C. § 103 as being unpatentable over Haney in view of Zimmerman and further in view of King, et al. The arguments noted above are equally applicable here.

Claims 24-32, 46-47 and 50-55 have been rejected under 35 U.S.C. § 103 as being unpatentable over Haney in view of Zimmerman, and further in view of Lefkowitz and Baer, et al. The examiner states that the device to Haney is not used in an

interactive environment, but Lefkowitz provides the motivation to use the device of Haney and an interactive device, since Lefkowitz teaches that detection of a body part can be used to control an object that interacts with virtual objects. Baer, et al. has been cited to show the circuitry for indicating contact between controlled objects and virtual objects to manipulate the same. The same type of argument has been rejected by the Board of Patent Appeals and Interferences in Ex parte Peter D. Dickenson, et al., Appeal No. 87-3335, dated June 23, 1985 regarding Application Serial No. 688,295 entitled "Reel Monitoring Device for Amusement Machines." Note in particular pages 9-10 wherein the Board of Appeals discussed how the motivation to combine the teachings of references must be made with reference to the devices discussed in the references.

Even if it is true that Lefkowitz teaches that detection of a body part can be used to control an object that interacts with virtual objects, it is no indication that the operation of the Haney device in an interactive fashion is desirable. Haney is only concerned with animating a live actor. Haney is not concerned with controlling the computer with the movements of the actor. Furthermore, there is no motivation to use the teachings of Haney and Lefkowitz because, since Lefkowitz relies upon body capacitance to sense position within a field, the structural information about the body is completely lost and therefore the computer cannot represent the cursor within the

computer as emulating the position and flexure of the part of the user's body.

With respect to the teaching of Baer, et al., since neither Haney nor Lefkowitz discloses nor suggests that detecting contact between Haney's animated character and some other object is desirable. Thus, the combination of references is improper.

Claims 1, 3, 10, 13-47 and 52-59 have been rejected under 35 U.S.C. § 103 as being unpatentable over Fisher, et al. Furthermore, Claims 48-51 and 60-61 have been rejected under 35 U.S.C. § 103 as being unpatentable over Fisher, et al. and further in view of Zimmerman. Applicants submit herewith a declaration under 37 C.F.R. 131 showing the completion of the invention in this country before the date of the printed publication. Accordingly, Fisher et al. cannot be used as prior art, and this basis for rejection is overcome.

Accordingly, it is believed that rejections under 35 U.S.C. § 103 have been overcome by the foregoing Amendment and Remarks, and it is submitted that the claims are in condition for allowance. Re-examination and reconsideration of this application, as amended, are respectfully requested. Allowance of all claims is earnestly solicited.

c:\jad\claims fax